

1. In a system capable of replicating a server copy of a resource stored on one or more servers with a client copy of the resource stored on one or more clients, a method for resolving a resource conflict comprising the steps of:

detecting, by the server, that the resource on the server conflicts with the copy of the resource on a client;

determining, at the server, whether the conflict between the resource and the copy of the resource can be resolved;

creating, by the server, a conflict resource, if the conflict cannot be resolved at the server;

evaluating, at the client, whether the conflict resource can be resolved in accordance with a schema of the client if the conflict was not resolved at the server; and

presenting the conflict resource to a user if the conflict resource cannot be resolved by the client.

2. A method as defined in claim 1, wherein the step of detecting further comprises the step of comparing a client resource tag, provided by the client, with a server resource tag.

3. A method as defined in claim 2, wherein the client resource tag is representative of a version of the resource.

4. A method as defined in claim 2, wherein the server resource tag is representative of a version of the resource.

1           5.       A method as defined in claim 1, wherein the step of determining further  
2 comprises the step of resolving the conflict at the server.

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4           6.       A method as defined in claim 1, wherein the step of determining further  
5 comprises the step of comparing the client copy of the resource with the server copy of the  
6 resource.

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8           7.       A method as defined in claim 1, wherein the conflict resource comprises the  
9 server copy of the resource and the client copy of the resource.

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11          8.       A method as defined in claim 1, wherein the step of evaluating further  
12 comprises the step of resolving the conflict at the client in accordance with the schema.

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14          9.       A method as defined in claim 1, further comprising the steps of:  
15               uploading the resolved conflict resource to the server; and  
16               returning a new resource tag to the client from the server.

10. In a system having multiple copies of a resource, a method for detecting and resolving a conflict between a client copy of the resource and a server copy of the resource, the method comprising the steps of:

receiving, from the client, a client resource tag at the server, wherein the client resource tag identifies a client version of the client copy of the resource;

determining, by the server, whether the client resource tag matches the server resource tag, wherein the server resource tag identifies a server version of the server copy of the resource;

determining that a conflict exists if the client resource tag does not match the server resource tag; and

executing a server level of conflict resolution between the client copy of the resource and the server copy of the resource at the server.

11. A method as defined in claim 10, wherein the step of determining by the server further comprises the step of comparing the client resource tag with the server resource tag.

12. A method as defined in claim 10, wherein the client resource tag is transmitted to the server in a PUT method.

13. A method as defined in claim 10, further comprising the step of initiating the conflict detection from the client.

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14. A method as defined in claim 10, wherein the step of executing a server level of conflict resolution further comprises the step of comparing the client copy of the resource with the server copy of the resource.

15. A method as defined in claim 14, further comprising the step of resolving the conflict if the client copy of the resource matches the server copy of the resource.

16. A method as defined in claim 14, further comprising the step of resolving the conflict in accordance with a schema known to the server.

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17. In a system having one or more server copies of a resource and one or more client copies of a resource, a method for resolving a conflict between a server copy of the resource and a client copy of the resource, the method comprising the steps of:  
receiving, from a server, a conflict resource at a client; and  
executing a client level of conflict resolution between the client copy of the resource and the server copy of the resource at the client.

18. A method as defined in claim 17, wherein the conflict resource comprises the server copy of the resource.

19. A method as defined in claim 17, wherein the conflict resource comprises the server copy of the resource and the client copy of the resource.

20. A method as defined in claim 17, wherein the conflict resource comprises a set of differences existing between the server copy of the resource and the client copy of the resource.

21. A method as defined in claim 17, wherein the conflict resource comprises information useful to the client for resolving the conflict.

22. A method as defined in claim 17, further comprising the step of detecting a conflict by a server.

1           23.     A method as defined in claim 17, further comprising the step of detecting a  
2 conflict by comparing a client resource tag with a server resource tag, wherein the client  
3 resource tag is representative of a version of the client copy of the resource and the server  
4 resource tag is representative of a version of the server copy of the resource and a conflict is  
5 detected if the client resource tag and the server resource tag do not match.

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7           24.     A method as defined in claim 17, further comprising the step of executing a  
8 server level of conflict resolution.

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10          25.     A method as defined in claim 24, wherein the step of executing a server level  
11 of conflict resolution further comprises the step of resolving the conflict.

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13          26.     A method as defined in claim 17, wherein the step of executing a client level  
14 of conflict resolution further comprises the step of resolving the conflict in accordance with  
15 a schema known to the client.

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17          27.     A method as defined in claim 17, wherein the step of executing a client level  
18 of conflict resolution further comprises the step of comparing the changes made to the client  
19 copy of the resource and the server copy of the resource.

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21          28.     A method as defined in claim 17, wherein the step of executing a client level  
22 of conflict resolution further comprises the step of uploading the resolved conflict resource  
23 to the server.

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29. A method as defined in claim 28, further comprising the step of returning to the client a new resource tag, wherein the new resource tag identified the current version of the server copy of the resource and the client version of the resource.

1 ~~Sub~~ 30. In a system capable of replicating resources from one or more servers to one  
2 or more clients, a method for resolving a conflict, the method comprising the steps of:  
3 detecting the conflict, wherein detecting the conflict comprises the steps of:  
4 transmitting a client resource tag to a server;  
5 comparing, by the server, the client resource tag with a server  
6 resource tag; and  
7 determining that there is a conflict between a client copy of a resource  
8 and a server copy of the resource if the client resource tag does not match the  
9 server resource tag; and  
10 executing one or more levels of conflict resolution until the conflict is  
11 resolved.

13 31. A method as defined in claim 30, wherein a first level of conflict resolution is  
14 a server level of conflict resolution, a second level of conflict resolution is a client level of  
15 conflict resolution and a third level of conflict resolution requires an end user to resolve the  
16 conflict.

18 32. A method as defined in claim 31, wherein the step of executing one or more  
19 levels further comprises the step of executing the server level of conflict resolution at the  
20 server.

22 33. A method as defined in claim 31, wherein the step of executing one or more  
23 levels further comprises the step of executing the client level of conflict resolution at the  
24 client.



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A method as defined in claim 31, wherein the step of executing one or more levels further comprises the step of executing a third level of conflict resolution.

35. A method as defined in claim 30, wherein the step of executing one or more levels further comprises the step of resolving the conflict.

36. A method as defined in claim 30, wherein the step of executing one or more levels further comprises the step of resolving the conflict in accordance with a schema.

37. A method as defined in claim 36, wherein the schema is known to the server.

38. A method as defined in claim 36, wherein the schema is known to the client.

39. A method as defined in claim 30, wherein the step of executing one or more levels further comprises the steps of uploading the resolved resource to the server and transmitting a new resource tag to the client.

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2 In a system capable of replication a resource from one or more server to one  
3 or more clients, a computer program product for a method for detecting and resolving  
4 resource conflicts, the computer program product comprising:

5 a computer readable medium carrying computer executable instructions for  
6 implementing the method, wherein the computer executable instructions comprise:

7 program code means for detecting a resource conflict;

8 program code means for comparing a client resource tag with a server  
9 resource tag, wherein the client resource tag and the server resource tag are  
10 representative of a version of the resource;

11 program code means for resolving the conflict at the server;

12 program code means for creating a conflict resource if the conflict  
13 cannot be resolved at the server;

14 program code means for resolving the conflict at the client by  
15 evaluating the conflict resource in accordance with a schema known to the  
16 client; and

17 program code means for presenting the conflict resource to an end  
18 user for conflict resolution if the client cannot resolve the conflict.

19 41. A computer program product as in claim 40, wherein the computer  
20 executable instructions further comprise program code means for:

21 uploading the resolved conflict resource to the server; and

22 providing the client with a new resource tag.  
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42. In a system capable of replicating a resource between a client and a server, a computer program product for a method for detecting and resolving a conflict between a client copy of the resource and a server copy of the resource, the computer program product comprising:

a computer readable medium carrying computer executable instructions for implementing the method, wherein the computer executable instructions comprise:

program code means for transmitting a client resource tag to a server;

program code means for comparing, by the server, the client resource tag with a server resource tag;

program code means for determining that there is a conflict between a client copy of a resource and a server copy of the resource if the client resource tag does not match the server resource tag; and

program code means for executing one or more levels of conflict resolution until the conflict is resolved.

43. A computer program product as in claim 42, wherein the computer executable instructions further comprise program code means for:

executing a server level of conflict resolution;

executing a client level of conflict resolution; and

executing a third level of conflict resolution.